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INEFFECTIVE MANAGEMENT OF THE APPROPRIATE TECHNOLOGY SMALL GRAN--ETC(U)
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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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ENERGY AND MINERALS
DIVISION

B-203866

The Honorable James B. Edwards
The Secretary of Energy

Dear Mr. Secretary:

SUBJECT: Ineffective Management of the Appropriate
Technology Small Grants Program. (END-81-113)

The General Accounting Office has completed a review of the Department of Energy's (DOE's) Appropriate Technology Small Grants (ATSG) program. Overall, we believe the ATSG program can help overcome barriers to the development and use of energy-related appropriate technology. However, because of problems in DOE's management of the program, its effectiveness has been limited. Our specific concerns are the

- limited technical assistance available for grantees.
- failure to coordinate the ATSG program with related programs which have the potential to help further ATSG program goals, and
- lack of consistent application of criteria used to evaluate and select projects for funding.

Because of these problems, we question whether limited program funds have been used most effectively to encourage the development and widespread use of energy-related appropriate technology.

The administration's proposed fiscal year 1982 budget, which was submitted to the Congress while we were in the midst of our review, did not contain funding for the ATSG program. However, the Congress has authorized \$5 million for the program for fiscal year 1982. Also, DOE's fiscal year 1982 appropriations bill, passed by the House and recommended by the full Senate Appropriations Committee, provides \$3 million for the ATSG program. The House and Senate Appropriations Committee reports accompanying the appropriations bills stipulate that the funds are to be used for monitoring previously awarded grants and disseminating results of successful projects. No funds are made available for awarding additional grants.

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We recognize, because of these budget actions, it is very likely that the scope of ATSG program activities will be sharply reduced in fiscal year 1982. However, we believe that our recommendations with respect to increasing the availability of technical assistance and improving program coordination are relevant to those ATSG program activities which will be continued. In addition, our findings with regard to project selection will be useful if additional grant funds are made available at some future date.

Our work was undertaken because the increased use of appropriate technologies can contribute to efforts to reduce the Nation's dependence on unreliable energy sources as well as foster the development and use of renewable energy sources. Our review was conducted primarily at DOE headquarters in Washington, D.C., and in 6 of the 10 DOE regional offices. We interviewed DOE officials to discuss their activities and views regarding program operation. We also reviewed program documents and other literature concerning appropriate technology, including reports by the Congressional Research Service, Office of Technology Assessment, and the National Science Foundation.

BACKGROUND

Energy-related appropriate technologies are those which are small-scale and labor-intensive, use locally available resources, reduce reliance on scarce or non-renewable energy resources, and are environmentally sound. The development and application of these technologies can increase the mix of energy options available to individuals and the Nation by providing alternatives to capital-intensive, centralized energy technologies; reduce energy costs to individuals; provide employment opportunities; and increase local self-reliance.

In 1977, the Congress authorized 1/ the Energy Research and Development Administration to establish a program to provide grants of up to \$50,000 to individuals, small businesses, State and local agencies, and Indian tribes to develop and demonstrate energy-related appropriate technology. This program was subsequently transferred to DOE by the DOE Organization Act, and is now called the Appropriate Technology Small Grants program.

DOE established four broad ATSG program goals. They are:

--Make more energy-related technology options available in the United States.

1/Energy Research and Development Administration Appropriation Authorization for Fiscal Year 1977 (Pub. L. 95-39, Sec. 112).

- Provide access to DOE funding for individuals and groups who would not otherwise have access.
- Make technology, not otherwise accessible, available to DOE.
- Further national efforts in promoting the use of renewable resources and conservation of non-renewable resources.

After conducting a pilot effort in one region in fiscal year 1978, DOE expanded the program nationwide in fiscal year 1979. In operating the program, DOE solicits proposals for energy-related appropriate technology projects, evaluates them, awards grants, evaluates grant results, and collects and disseminates information. The program is highly decentralized, primarily implemented through DOE's 10 regional offices. Funding for the program increased from \$3 million in fiscal year 1978 to \$12 million for fiscal year 1981. Through fiscal year 1980, more than 1,500 grants totalling about \$18 million were awarded.

Several studies conducted by Government agencies ^{1/} have identified barriers to the development of appropriate technology in the United States. The major obstacles identified in these studies were

- a lack of venture capital and
- a lack of reliable technical information and a good information dissemination system.

The lack of venture capital for the development of appropriate technology primarily exists because such projects tend to be innovative. Financial institutions are generally hesitant to underwrite innovative projects. With respect to information problems, the studies pointed out that developing accurate information on appropriate technologies and disseminating that information to potential users was important in fostering their widespread application. The studies found reliable technical information was needed and that an effective information network did not exist.

^{1/}An Assessment of Technology for Local Development, Office of Technology Assessment, U.S. Congress, 1981. Appropriate Technology In The United States - An Exploratory Study, National Science Foundation/Research Applied to National Needs, 1976. Advisory Committee on Industrial Innovation - Final Report, U.S. Department of Commerce, Domestic Policy Review of Industrial Innovation, 1979. Schacht, Wendy H., Appropriate Technology: Alternative Domestic Technologies, Congressional Research Service, (Archived: Jan. 31, 1980) (Issue Brief Number IB 77090).

The Congress, in establishing the ATSG program, directly addressed the above obstacles to the development of appropriate technology. Venture capital for appropriate technology projects is made available in the form of small grants. The Congress also mandated that the program provide for an expanded and coordinated effort for the development and demonstration of appropriate technology, and for the dissemination of information with respect to appropriate technology. Furthermore, the Congress indicated that the program should broaden the Federal Government's energy research and development activities by tapping the creative talents which exist outside of the national labs, major corporations, and universities.

INEFFECTIVE PROGRAM MANAGEMENT

DOE has not effectively managed the ATSG program in the areas of technical assistance, program coordination, and project selection. These are discussed in detail below.

Limited technical assistance

DOE's regional offices generally do not provide technical assistance nor are they prepared to respond to requests from grantees for such assistance. The ability to make technical assistance available is particularly important in programs such as the ATSG program, where grantees are individuals or small organizations which may have limited access to technical resources. Although DOE has not required its regions to provide technical assistance, DOE regions should be prepared to, at a minimum, refer grantees experiencing technical problems to appropriate sources for assistance.

We found that some DOE regional offices were not prepared to assist grantees with technical problems. Reasons cited by these regional offices were a shortage of time and money and the unavailability of technical expertise in the regional offices. In contrast, we found that limited technical assistance was available in other regional offices. For example, in one region a technical expert is sent, when possible, on site visits as a member of a project monitoring team. In another region, the regional program manager usually refers grantees seeking technical assistance to experts or agencies outside the regional office. Other regions have limited the technical assistance they provide to background information on various technical processes.

Although we did not identify any specific instances where grantees sought and were not provided technical assistance, we believe DOE should be better prepared to provide such assistance. Because grantees are individuals and small organizations, they may have limited access to technical resources. When technical problems arise which are outside the expertise of the grantees,

technical assistance can help to resolve such problems and provide added assurance that projects are successfully completed in a timely manner. In this regard, DOE headquarters has been negotiating with the National Center for Appropriate Technology (NCAT) ^{1/} to provide technical assistance to grantees when needed. However, at the time of our review no agreement had been reached.

As mentioned earlier, a limited amount of program funds are expected to be made available in fiscal year 1982 to monitor projects underway and disseminate information on the results of successful projects. In carrying out the monitoring activities, DOE should be prepared to assist grantees experiencing technical problems either directly or through referral to other appropriate sources to ensure timely project completion.

Limited coordination of ATSG program with related programs

Little has been done to coordinate or integrate the ATSG program with related DOE or other Federal programs either at the headquarters or regional level. The full potential of the ATSG program may not be realized if information developed through the program is not systematically made available to potential users, in both the private and public sectors.

At DOE headquarters, efforts to coordinate the program have not been very successful. In fiscal year 1980, headquarters surveyed other DOE programs to determine if and how they could be coordinated with the ATSG program. A draft summary was written which identified potential areas where coordination with other DOE programs could increase the effectiveness of the ATSG program. However, no actions were taken. In addition, informal discussions were held with NCAT to explore the possibility of using existing information networks to disseminate the results of ATSG program projects. However, at the time of our review, this effort had produced no results.

At the regional level we found no systematic effort to use either the Energy Extension Service, the Regional Solar Energy Centers, or NCAT to disseminate information. The Energy Extension

^{1/}NCAT is a non-profit corporation receiving the majority of its funding from the Community Services Administration. It was funded to research, develop, adapt, and transfer to low-income communities a variety of appropriate technologies that address problems of poverty. As such, NCAT has many objectives which correspond to interests of the ATSG program.

Service and NCAT were specifically identified by the Congress ^{1/} as potential means of disseminating information and providing commercialization assistance.

Although effective coordination and information dissemination is not occurring systematically, we did find isolated instances where successful coordination of the ATSG program with other efforts had taken place. For example, one joint-venture was undertaken with DOE's Energy Extension Service to conduct a series of do-it-yourself solar collector workshops. Under this project, the Energy Extension Service was allocated \$600,000 to conduct the workshops, which were developed by the Arizona State University with an \$11,100 grant under the fiscal year 1978 ATSG pilot program. In the workshops, participants, who paid a fee covering material costs, built their own solar collectors and learned how to install them as a supplement to existing hot water systems. In another case, one regional program office submitted 150 of its unfunded proposals to other programs for consideration. Subsequently, about 35 of the proposals were funded under those programs.

Failure to consistently apply
project selection criteria

DOE has failed to provide reasonable assurance that criteria used to evaluate the merits of grant proposals within DOE regions are being consistently applied in the project selection process. State review panels are exercising considerable flexibility in evaluating the merits of proposals, both in terms of applying DOE's evaluation criteria as well as introducing additional, panel-developed, evaluation criteria. Because of this flexibility, proposed projects from different States within DOE regions are being evaluated for funding based on different criteria. The failure to consistently apply only DOE evaluation criteria, coupled with DOE's heavy reliance on State review panel recommendations in making final selections, raises questions as to whether the projects being funded most effectively support DOE's program goals and objectives.

DOE regulations provide for a four-step process to evaluate proposals and award grants. These steps are: pre-screening, technical/feasibility review, State review, and DOE regional

1/Authorizing Appropriations For ERDA--Fiscal Year 1977, Report of the Committee On Interior And Insular Affairs, United States Senate (Report No. 94-879). Department Of The Interior And Related Agencies Appropriations Bill, 1978, Report of the Appropriations Committee, House of Representatives (Report No. 95-392).

review and project selection. 1/ The regulations provide criteria which are to be considered during these review steps.

With respect to the State review, DOE program regulations provide that the following criteria be used in evaluating the merits of proposed projects:

- The potential energy impact of the proposal on the community or region.
- The energy resource involved and its importance or availability to the community or region.
- The potential of a proposal to deal with institutional barriers to the use of appropriate technology.
- The likelihood and extent of commercializing or using the technology, process, or items within the proposal.
- The innovative nature of the proposal.
- Any potential environmental, health, or safety impacts.
- The extent to which local resources, material, and manpower will be used.
- The adequacy of the proposal's business aspects.

Regional program managers provide State review panels guidance on how the criteria are to be applied in evaluating projects. The extent to which this occurs differs from region to region. Some DOE regions use standardized review forms while others weight various criteria which the regional program manager judges most important to achieving program objectives. In some cases, DOE regional program managers give reviewers no additional guidance other than what is provided by program regulations.

Although DOE regional program managers generally provide guidance for applying evaluation criteria, State reviewers do not always adhere to this guidance. For example, in one region, the

1/Prescreening is primarily a clerical task performed as proposals are submitted to DOE to determine completeness, appropriateness, and adequacy of technical and financial information. The technical/feasibility review is carried out, usually under contract, to determine if proposals are technically feasible, if results can be measured or evaluated, if environmental impacts are addressed, and if the proposal can be carried out with the requested funds.

regional program manager supplied State reviewers with an evaluation form which heavily emphasized a proposal's potential energy impact on the region and the likelihood and extent of its commercialization or use. While some State review panels followed the suggested evaluation form closely, others amended it to place less emphasis on these criteria. In another region, while a recommended form was provided to each State review panel, none of the States adhered to the form completely in the review process.

Following the evaluation of proposals, the State review panels develop lists of proposals recommended for funding. In preparing these lists, State review panels sometimes consider additional criteria, such as, in one case, those de-emphasizing alcohol fuel and solar hot water projects and emphasizing passive solar design projects.

The introduction of State panel-developed criteria into the evaluation process can result in DOE selecting projects for funding from recommendations quite different than those which would result from the application of DOE criteria alone. For example, the application of State panel-generated criteria in one State in 1980, resulted in a reordering of the project rankings which were developed using DOE evaluation criteria. As a result, 22 of the highest ranked projects, including the top-ranked one, according to DOE's criteria, were not included in the final list of 38 projects recommended by the State panel for funding.

The importance of the State review panel recommendations is amplified by the emphasis given to them in the final selections made by DOE regional representatives. While this emphasis varied from region-to-region, overall we found it to be significant. In the regions we visited, we were told by program officials that the DOE regional reviewers follow State review panel recommendations closely in making their final recommendations to the regional representatives. For example, in one DOE region in 1980, final selections of proposals for funding followed State review panel recommendations 82 percent of the time.

As a result of the emphasis on the State panel recommendations, DOE funded proposals which were rated lower, by its own criteria, than some projects not funded. In the previously cited example, DOE selected 20 projects for funding, totaling \$445,000, from the 38 projects recommended by the State review panel. However, at least four projects selected for funding would not have been recommended for funding if DOE criteria alone had been used.

CONCLUSIONS AND RECOMMENDATIONS

The ATSG program can help overcome barriers to the development and use of energy-related appropriate technology which have

been identified by various studies. The broad program goals established by DOE appear to adequately reflect the legislative purposes of the program. However, we do not believe that DOE has managed the ATSG program effectively.

DOE's efforts to make technical assistance available to grantees has been limited. We believe that the ability to readily assist grantees experiencing technical problems is important to ensure that projects are progressing as planned and are not stymied by resolvable problems. The ability to make technical assistance available is particularly important in programs such as the ATSG program, where grantees are individuals or small organizations which may have limited access to technical resources.

Furthermore, DOE has not effectively coordinated the ATSG program with related DOE or other Federal agency programs, especially with respect to establishing networks for transferring information. We believe that the full energy-related benefits of the program may not be realized if information developed is not systematically made available to potential users, both in the public and private sector.

Finally, in our view, DOE has failed to assure that criteria used to evaluate the merits of proposals for program funding are being consistently applied. We are concerned that the selection process has resulted in State review panels exercising considerable flexibility in applying DOE's evaluation criteria and in applying additional, panel-developed criteria. The failure to consistently apply only DOE evaluation criteria, coupled with DOE's extensive reliance on State review panel recommendations in making final selections, raises questions as to whether projects being funded most effectively support DOE's program goals and objectives.

As a result of these management problems, we believe that the limited program funds have not been used most effectively to encourage the development and widespread use of energy-related appropriate technology.

Recommendations

To ensure that benefits of ongoing projects are maximized, we recommend that you

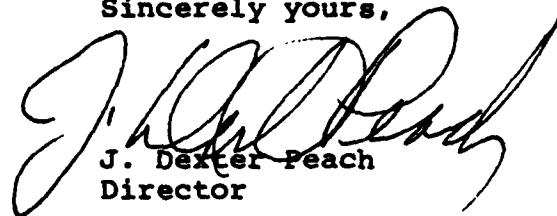
--develop an effective mechanism to disseminate project results to potential users, and

--make technical assistance available to grantees to resolve problems identified through project monitoring or brought to DOE's attention by grantees.

As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this report are also being sent to the Director, Office of Management and Budget, and to the Chairmen of selected Congressional Committees and Subcommittees.

Sincerely yours,



J. Dexter Peach
Director